

BOARD OF COUNTY COMMISSIONERS

AGENDA ITEM SUMMARY

Meeting Date: June 18, 2003

Division: BOCC

Bulk Item: Yes ☐ No ☒

Department: DISTRICT 5

AGENDA ITEM WORDING:

Discussion and approval of a standardized method of bidding, method of process, method of collection, and type of materials used for wastewater plants under one million gallons per day in unincorporated Monroe County.

ITEM BACKGROUND:

Recent studies have shown that design bid projects (7.6.4) receive the best engineering and construction costs by using industry's expertise to design them. The latest technology in wastewater is the upflow sludge blanket filtration (or equal) with low operating cost, minimal sludge hauling and low initial capital costs. The BOCC has adopted by agenda item to use pre-engineered field erected steel units as recommended by the Wastewater Master Plan (3.7.1). The Wastewater Master Plan recommends using a vacuum collection system as the most cost effective (3.8.1). A standard for the bid process, wastewater process, collection system and materials used for wastewater plants should be adopted by resolution to create a standard throughout the county.

PREVIOUS RELEVANT BOCC ACTION:

CONTRACT/AGREEMENT CHANGES:

STAFF RECOMMENDATIONS:

TOTAL COST: N/A

BUDGETED: Yes ☐ No ☐

COST TO COUNTY: _____

SOURCE OF FUNDS: _____

REVENUE PRODUCING: Yes ☐ No ☐ **AMOUNT PER MONTH** _____ **Year** _____

APPROVED BY: County Atty _____ OMB/Purchasing _____ Risk Management _____

DIVISION DIRECTOR APPROVAL:


MAYOR PRO TEM MURRAY NELSON

DOCUMENTATION: Included ☒ To Follow _____ Not Required _____

DISPOSITION: _____

AGENDA ITEM # W2

the construction manager, then has the flexibility to decide what equipment and material are to be furnished on the project, based on the prices received and the detailed project cost estimate prepared by the construction manager. This delivery method allows the owner to control the quality of the equipment and materials used on the project.

As a general guideline, construction management projects can usually be delivered in a somewhat shorter time period than those delivered under traditional methods.

7.6.4 Design/Build

The design/build alternative offers the owner the ability to deliver a project rapidly and cost effectively. In this case, the owner prepares a bid package. This bid package can vary in the amount of detail provided, depending on what the owner wants, the schedule desired, and the risks willing to be assumed. The ideal design/build procurement occurs when the owner retains a program management firm that prepares design criteria and a design development document for the project that is approximately 15 to 20 percent complete. At this point, the designer/builder still has an opportunity to be creative, while the owner maintains some control by developing, or participating in, the design up to the 15- to 20-percent stage.

Proposals, which include project approach, project team qualifica-

tions, and price, are solicited from qualified designer/builders, with the award usually based on the lowest project cost, although there are many other qualitative selection criteria that could be used. Once selected, the designer/builder is charged with implementing the conceptual design over the specified project delivery period.

For some owners, this concept of project delivery best meets their expectations for the following reasons:

Sole Source Responsibility. Because the contractor and engineer are operating as a team, one entity is responsible for the delivery, acceptability, and performance of the finished project.

Cost. Often, these projects are the most cost-effective for the owner for several reasons:

1. The delivery time is much shorter and administrative and construction costs, therefore, tend to be lower.
2. The design and its related costs should be completed only to the extent required by the designer/builder and permitting agencies.
3. Because 80 to 85 percent of the design details are left up to the designer/builder, the marketplace will provide the owner with the most cost-effective solution that fulfills the obligations contained in the request for proposal (RFP).

Time. The overall project implementation period is normally shortened. On most projects, this can shorten the schedule by at least 3 to 6 months.

In using this method of delivery, however, owners must recognize that they will have less control over the outcome of the project than with other methods.

7.6.5 Privatization

Privatization concepts are gaining more appeal as communities and wastewater utilities across the United States address stringent fiscal issues. Privatization includes a variety of options, ranging from outsourcing specific functions (e.g., sludge hauling, lawn maintenance), to contract operations of the facility, to full ownership and operation of facilities. At the present time, more than 500 large municipal treatment plants are operated by private contract operations firms throughout the United States and abroad. In the Keys, almost all the treatment plants are operated by private contract operations firms. Privatization options include:

Contract Operations: Where the owner contracts with a private operations firm to operate existing or newly constructed facilities.

Design/Build/Operate: Where the owner contracts with a private firm to design, build, and operate the facility for a fixed fee. Generally, the number of years of operation is defined by contract, and there

3.8.1 Collection System Construction Cost Estimates

Total annual collection system costs per EDU within the study areas ranged from \$154 on Windley Key (Study Area 18) to \$1,595 for Ocean Reef Club (Study Area 27), where houses are relatively far apart. Densely populated areas typically cost less per EDU to sewer than less densely populated areas, but costs were highly site-specific. As shown in Exhibits 3-37 and 3-38, vacuum collection was typically the most cost-effective collection alternative when the number of EDUs being collected was more than about 350. In 22 of the 27 study areas, vacuum collection was the lowest cost alternative for serving the entire study area. Technical Memorandum No. 6 in Volume 4, *Supporting Documents*, of this Master Plan, provides a detailed discussion, evaluation, and cost estimates for the collection system alternatives.

Besides being the most cost-effective collection system alternative, vacuum sewer systems offer the following additional benefits:

- ◆ No electrical power is required at each home or vacuum valve
- ◆ Wastewater collection service is maintained during short-term or long-term utility power outages. A standby generator that will automatically generate power if there is a loss of utility power will be provided at each vacuum station.
- ◆ Air drawn into the vacuum system with the sewage will help to keep the sewage fresh, and thus will help to eliminate odors.

ingness to continue to accept the solids in the future remains to be established.

The Key West WWTP dewaterers partially-stabilized secondary solids, which are disposed via a private hauler at an agricultural land application site near Okeechobee, Florida. Because the solids are only partially stabilized, they are incorporated into the soil the same day they are applied to meet FDEP vector attraction reduction requirements.

Detailed evaluations and cost comparisons of nine different solids handling and disposal alternatives were investigated in Technical Memorandum No. 10 (see Volume 4, *Supporting Documents*), and many treatment and disposal methods were eliminated on the basis of cost, operational complexity, implementation issues, and/or uncertain end-product marketability. Dewatering/Lime Stabilization/Cake Haul was generally least costly for WWTPs of 100,000 gpd capacity and larger. Digestion alternatives were cost-competitive options throughout this range and should be considered as a viable means of solids disposal. Hauling liquid sludge to the Monroe County Solid Waste Transfer Station was the most economical option for facility sizes below 100,000 gpd.

Sludge dewatering would be accomplished with the use of belt filter presses for facility sizes of 1 mgd and greater, with onsite covered storage provided for the filter cake. For the smaller plants, conventional sand drying beds

would be used. The lime stabilization systems would incorporate a silo and automatic feed system for facility sizes of 0.5 mgd and larger, with bagged lime and a bag dump station used for the smaller plants. Wet scrubbers would be provided for odor control for the larger lime stabilization systems of 1.0 mgd and greater.

3.6.3 Summary of Solids Handling Systems

The following solids handling systems were selected as the basis for cost estimates.

- ◆ Plants with capacities of 4,000; 10,000; 25,000; and 50,000 gpd—temporary storage of decanted sludge in an aerated holding tank, and truck hauling the liquid sludge to the Monroe County Solid Waste Transfer Station.
- ◆ Plants with capacities of 100,000, 500,000, 1,000,000, 2,000,000, and 6,000,000 gpd—belt filter press dewatering, Class B lime stabilization, and truck hauling of dewatered cake to a remote agricultural land application site.

3.7 WWTP Cost Estimates

3.7.1 Cost Estimates for New WWTPs

Exhibit 3-33 summarizes the estimated construction costs and annual O&M costs for new BAT/AWT WWTPs at the nine different WWTP capacities. Annual costs and the cost to treat 1,000 gallons of wastewater are also illustrated. The estimates are based on the process selections described in the previous section for liquid treatment, effluent disposal, and solids handling. Costs of wastewater collection and influent pumping are not included in this exhibit, but are presented later in Section 3.8.

For capacities of 1,000,000 gpd and below, pre-engineered, field-erected steel units are

EXHIBIT 3-33

Construction and O&M Costs of New BAT/AWT WWTPs at Various Design Capacities

Plant Capacity (gpd)	Construction Cost (\$)	O&M Cost (\$/year)	Total Annual Cost (\$/year)	Cost per 1,000 Gal' (\$/1,000 gal)
4,000	261,000	30,500	53,200	45.55
10,000	311,000	35,500	62,600	21.44
25,000	422,000	49,500	86,300	11.82
50,000	601,000	66,500	119,000	8.15
100,000	874,000	100,000	176,000	6.03
500,000	4,170,000	440,000	804,000	5.51
1,000,000	10,100,000	690,000	1,570,000	5.38
2,000,000	12,570,000	940,000	2,040,000	3.49
6,000,000	21,970,000	1,920,000	3,840,000	2.19

Assumes that plants are operating at 80% of capacity

HOME OFFICE
4217 N. Old. U.S. 31, P.O. Box 528
Rochester, IN 46975
Phone: 219-223-3980
FAX: 219-223-5566

AIRVAC
Vacuum Collection Systems

Attachment E

Reference 4

TAMPA OFFICE
200 Tower Drive, Suite
Oldsmar, FL 34677
Phone: 813-855-629
FAX: 813-855-9093

574
January 24, 2002

Jeff Weiler, P.E.
The Weiler Corporation
20020 Veterans Boulevard
Suite 7-9
Port Charlotte, FL 33954

RE: Conch Key, FL
AIRVAC Estimate #2002-110

Jeff:

Enclosed is an AIRVAC budget estimate and layout for Conch Key. Also enclosed is a Technical Report that gives supporting information as well as technical data relating to this estimate.

We obviously are pleased that you are looking at using vacuum sewers for this area. However, we do want to give you the benefit of our experience with regard to small projects. It has been our experience that vacuum is rarely cost-effective for fewer than 100 connections. There are two reasons for this. First, it is difficult to overcome the cost of the vacuum station for very small projects. Second, the smaller projects typically do not involve very much pipe footage. This minimizes one of the largest cost savings of using vacuum. Obviously, none of the jobs in the Keys are "typical", so there may be other factors at work that will result in vacuum being cost-effective.

A summary of the costs is shown below:

# connections	70
# EDU's	153
Estimated Collection System Cost:	\$ 349,400
Estimated Vacuum Station Cost:	\$ 260,200
Total Estimated Cost:	\$ 609,600
Annual O & M Cost:	\$ 13,100/yr

Please note that our budget estimates include only the costs for the major vacuum system components. It does not include items such as final surface restoration, road borings, homeowner hookups and other incidental costs. Nor does it include project costs such as engineering, R.O.W., legal, etc.

Jeff Weiler, P.E.
January 24, 2002
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The cost issue aside, this appears to be a good application for vacuum sewers for the following reasons:

- A new vacuum sewer system would provide a superior collection system to a gravity sewer system. First, the inherent tight nature of vacuum would eliminate the I/I problems associated with gravity systems. Second, the shallow installation would make future connections and repairs much easier than with the deep gravity sewers. Finally, odors would be significantly reduced since no manholes or other openings exist within the collection system.
- Vacuum would also provide a superior system when compared to low-pressure sewers utilizing grinder pumps. Power is only required only at the vacuum station instead of at every service connection. Standby power at the vacuum station insures uninterrupted power during power outages whereas standby power is not practical for every single grinder pump. Long term O&M should be significantly less especially when replacement of grinder pumps at is considered @ year 10.

If you have any questions or require additional information, please do not hesitate to call.

Sincerely,

Rich Naret

Rich Naret, P.E.

*Rich 2.40 PM JULY 16
25' x 20' TOTAL AREA*

Copy to: AIRVAC - Rochester

*2-10 HP > 20 HP 3φ
2-10 HP 40 HP*

Reference 6

Name	Service Address	Class	Size	Units	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Total	x 100	(+ 12) Monthly Avg	(+ 365) Daily Avg
817 RONALD WILSON	WALKERS ISLAND LITTLE CONCH KEY	C	1"	10	1,563	1,844	1,749	2,069	802	608	815	777	801	374	570	552	12,524	1,252,400	104,367	3,431
745 MILDRED PASKIEWICZ	L23 CONCH KEY	R	5/8"	1	146	139	131	197	168	205	179	209	182	116	143	133	1,948	194,800	16,233	534
746 SUSAN E WARD	120 W CONCH AVE	R	5/8"	1	89	82	118	124	103	112	135	139	88	77	129	102	1,298	129,800	10,817	356
747 MIGUEL CABRERA	80 S CONCH AVE	R	5/8"	1	40	38	28	18	18	50	37	49	28	21	41	16	384	38,400	3,200	105
960 WILLIAM WIATT	472 W CONCH AVE	R	5/8"	4	149	128	119	217	155	149	172	167	192	98	134	92	1,772	177,200	14,767	485
124 DALE K BURNS	L34 CONCH KEY	R	5/8"	1	27	49	30	28	24	4	0	0	0	10	8	27	207	20,700	1,725	57
211 SANDRA J LOBAUGH	L20 CONCH KEY	R	5/8"	1	13	20	20	22	21	25	25	17	34	14	32	145	388	38,800	3,233	108
212 GENE P TRACY	70 S CONCH AVE	R	5/8"	1	94	96	86	108	81	124	56	108	130	50	52	51	1,036	103,600	8,633	284
229 DONALD J HALLADAY	20 S CONCH AVE AKA BOX 495	R	5/8"	1	47	47	42	59	72	22	41	49	49	44	51	45	568	56,800	4,733	156
411 ALFRED MCCULLOUGH	90 S CONCH AVE	R	5/8"	1	92	86	87	105	51	32	31	54	101	55	60	0	754	75,400	6,283	207
502 TIMOTHY J WOODS	CONCH TRAILER PARK CONCH KEY	R	5/8"	17	141	169	159	286	80	67	74	66	63	76	113	98	1,392	139,200	11,600	381
523 THOMAS H WARD	60 S CONCH AVE	R	5/8"	1	21	22	21	24	18	24	17	13	19	15	26	25	245	24,500	2,042	67
524 CAROL J GILKEY	482 N CONCH AVE	R	5/8"	1	32	47	43	58	41	79	103	24	25	56	32	29	569	56,900	4,742	156
525 MARY E KIGHT	43 N CONCH AVE	R	5/8"	1	17	11	19	15	6	13	8	19	12	8	13	11	143	14,300	1,192	39
526 MICHELLE SHELTON	63 N CONCH AVE	R	5/8"	1	24	15	14	34	44	30	39	52	42	35	49	46	424	42,400	3,533	116
528 JACK D BLIVEN	492 N CONCH AVE	R	5/8"	1	32	34	39	32	24	26	27	29	25	20	24	26	338	33,800	2,817	93
567 COLIN MORRIS	95 SEAVIEW AVE	R	5/8"	1	26	109	103	40	24	17	46	40	58	14	23	52	552	55,200	4,600	151
614 TOM HORACHEK	W 1/2 L1 CONCH KEY	R	5/8"	1	68	95	83	91	56	41	32	77	54	22	0	23	642	64,200	5,350	176
615 EUGENE JIRIK	E 1/2 L1 CONCH KEY	R	5/8"	1	26	26	26	28	21	6	0	0	0	0	31	30	194	19,400	1,617	53
634 JERAULD PUTO	CONCH KEY	R	5/8"	1	65	44	40	41	40	45	36	45	41	38	53	41	529	52,900	4,408	145
646 LINDA C SASSER	RT 1 BOX 483	R	5/8"	5	93	104	105	127	94	136	181	269	142	77	82	98	1,508	150,800	12,567	413
647 BETH NICHOLS	25 SEAVIEW AVE	R	5/8"	1	112	63	23	24	21	87	81	109	98	79	430	123	1,250	125,000	10,417	342
657 CARRIE L KIGHT	L17 CONCH KEY	R	5/8"	1	29	41	33	32	35	33	29	27	47	72	63	57	498	49,800	4,150	136
658 EVERETTE HARRY	LOT 55 SEAVIEW AVE CONCH KEY	R	5/8"	1	13	4	8	8	18	22	20	20	54	9	0	206	382	38,200	3,183	105
664 MANUEL GELABERT	35 SEAVIEW AVE	R	5/8"	1	15	17	18	28	6	5	4	3	13	9	1	2	121	12,100	1,008	33
755 TOBY KIGHT	L19 CONCH KEY	R	5/8"	2	64	65	68	74	45	59	49	39	54	43	48	46	654	65,400	5,450	179
809 DENISE M PERRY	RT 1 BOX 484 N CONCH AVE	R	5/8"	1	75	103	96	125	91	129	94	62	65	43	71	82	1,036	103,600	8,633	284
830 MARY E LLOYD	L16 CONCH KEY	R	5/8"	1	1	0	0	0	0	0	0	0	0	0	0	0	1	100	8	0
854 JAMES ERICKSON	53 N CONCH AVE	R	5/8"	1	42	45	39	47	43	41	31	33	49	44	33	40	487	48,700	4,058	133
899 JAMES F LANIER SR	73 N CONCH AVE	R	5/8"	1	14	52	55	38	43	42	40	56	23	19	13	1	396	39,600	3,300	108
900 SHIRLEY L DOLAN	L22 CONCH KEY RT1 BOX 480	R	5/8"	1	43	34	33	47	37	41	33	17	30	28	30	29	402	40,200	3,350	110
995 LEE & BETTY MONTEITH	LOT 57 SEAVIEW AVE	R	5/8"	1	0	2	6	2	1	8	33	0	6	3	6	3	73	7,300	608	20
025 DENISE PERRY	L59 SEAVIEW AVE CONCH KEY	R	5/8"	1	0	0	0	0	0	0	37	14	26	6	3	4	90	9,000	750	25
122 CHARLES D LEONARD	54 SEAVIEW AVE	R	5/8"	1	42	53	50	33	34	54	62	43	71	95	131	38	706	70,600	5,883	193
135 CHARLES H HORNE	L27 CONCH KEY	R	5/8"	1	17	19	11	8	9	18	10	12	13	9	13	11	150	15,000	1,250	41
136 DONALD Q BABB	L21 CORN W CONCH & S CONCH AVE	R	5/8"	1	36	30	25	36	49	0	31	0	3	9	19	11	249	24,900	2,075	68
223 KENNETH SOLIS	515 SEAVIEW AVE	R	5/8"	1	20	28	18	30	1	0	19	21	20	0	9	8	174	17,400	1,450	48
314 DORTHY CARTER	55 SEAVIEW AVE	R	5/8"	1	32	24	28	28	35	31	26	28	24	20	25	16	317	31,700	2,642	87
410 ARTHUR A MACOMBER	L61.62 CONCH KEY	R	5/8"	1	39	40	47	59	43	151	7	0	29	0	102	87	604	60,400	5,033	165
624 DALE E WILSON	64 SEAVIEW	R	5/8"	1	7	9	6	8	4	8	7	9	12	11	9	8	98	9,800	817	27
429 E.W. MATTHEWS	TRACT A CONCH KEY	R	5/8"	1	20	8	8	6	46	34	65	142	41	8	22	2	402	40,200	3,350	110
307 MRS MARY WILSON	74 SEAVIEW	R	5/8"	1	51	52	69	84	63	64	56	53	53	38	52	50	685	68,500	5,708	188
975 GRADY P SULLIVAN	CONCH KEY	R	5/8"	1	20	26	43	50	43	64	53	46	0	49	827	814	2,635	203,500	16,958	558
753 CHARLES FULFORD JR	ROUTE 1 BOX 485	R	5/8"	1	24	15	14	24	14	18	14	12	16	12	14	17	194	19,400	1,617	53
688 JOHN LUCE	75 SEAVIEW AVE	R	5/8"	1	45	49	44	53	43	39	33	29	51	33	29	24	472	47,200	3,933	129
935 CORAL KEY VILLAGE INC	TRAILER PK 52 TRAILERS	C	1"	52	2,719	1,739	1,631	1,523	1,204	1,297	1,944	1,436	1,278	795	907	1,753	18,226	1,822,600	151,883	4,993
190 BETH NICHOLS	DBA NICHOLS SEAFD BX 504 L51	C	5/8"	1	183	189	171	194	237	236	65	197	192	135	210	167	2,156	215,600	17,967	591
1548 JAMES L DEAN	34 SEAVIEW AVE	R	5/8"	1	2	51	34	67	8	15	24	17	56	3	14	0	291	29,100	2,425	80
197 WILLIAM WIATT	470 W CONCH AVE	R	1"	4	141	148	171	229	102	132	162	192	180	126	147	132	1,862	186,200	15,517	510
814 ALVIN RAY CARR	517 N CONCH AVE	R	5/8"	1	78	38	40	7	11	13	22	31	11	0	7	38	294	29,400	2,450	81
958 MARY E RATLIFF	19 N CONCH AVE	R	5/8"	1	62	102	60	71	60	48	57	67	70	53	58	56	764	76,400	6,367	209
041 HELEN LAPITSKY	27 N CONCH KEY	R	5/8"	1	15	17	18	15	13	14	13	12	12	3	15	13	160	16,000	1,333	44
394 BRUNHILDE CORADI	RT 1 BOX 519 A	R	5/8"	1	3	0	7	28	21	23	7	0	6	1	1	20	117	11,700	975	32
512 POSEIDON HARBOR INC	3 N CONCH AVE	C	5/8"	8	185	169	234	323	231	234	222	296	383	152	136	141	2,716	271,600	22,633	744
557 BETH NICHOLS	SEAVIEW AVE	R	5/8"	2	69	56	76	183	35	47	66	49	60	44	80	73	838	83,800	6,983	230
1118 EDNA DAVIS	CONCH KEY	R	5/8"	1	6	36	27	19	11	0	0	0	11	9	3	14	127	12,700	1,058	35
288 JOHN R LENCH	L14 CONCH KEY	R	5/8"	3	77	231	57	62	43	25	16	29	16	18	34	41	649	64,900	5,408	178
292 JOHN M BAJUSZ	L14 CONCH KEY	R	5/8"	1	18	20	18	24	19	12	7	16	18	10	23	27	212	21,200	1,767	58
299 DONALD T WESTVELD	L30 PARCEL C CONCH KEY	R	5/8"	1	41	85	56	33	15	25	3	1	87	0	5	28	379	37,900	3,158	104
1846 TIMOTHY J WOODS	CONCH TRAILER PARK CONCH KEY	R	5/8"	1	5	24	10	11	3	0	0	0	0	0	0	0	50	5,000	417	14
3015 THOMAS H WARD	L3 CONCH KEY	R	5/8"	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1940 JEFFREY B MEYER	US 1 MM 63.4 RT1 BOX 425	R	2"	3	47	39	28	42	41	17	54	43	62	43	40	41	497	49,700	4,142	136
1644 THOMAS R HORACHEK	L15 CONCH KEY	R	5/8"	1	7	10	5	4	2	0	1	0	1	0	0	0	30	3,000	250	8
1730 CORAL KEY FISHERIES INC	MM 63 OCEAN FISH HOUSE	C	5/8"	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3996 COUNTY OF MONROE	COUNTY OF MONROE CONCH KEY	C	1"	1	78	79	72	79	78	78	81	77	89	69	92	81	951	95,100	7,925	261
Total # of Conch					7,290	7,014	6,510	7,481	4,801	4,979	5,632	5,441	5,416	3,314	5,385	5,947	69,210	6,921,000	578,750	18,962

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**FLORIDA KEYS AQUEDUCT AUTHORITY
CONCH KEY WASTEWATER SYSTEM
Upflow Sludge Blanket Filtration (USBF) Treatment Design Criteria**

Service Area Flow			
	(gpd)	(gpm)	(mgd)
AADF	30,000	21	0.03
MMADF	42,000	29	0.04
PH	133,000	92	0.13

Water Quality Parameters				
	BOD5	TDS	TN	TP
Influent	250	250	40	8
Effluent	10	10	10	1

Other Parameters	
The Chlorine Contact Tank and Disposal Wells' Hydraulic Profile should be design taken into account the Flood Plain (100 year). Elevation of approximately 10 ft .	
The Monroe County Board of County Commissioners has determined that an on-site WWTP will be provided for Conch Key. A pre-engineered, field-erected steel unit has been recommended for this project.	
The Biological Nutrient Removal (BNR) treatment process will be the Upflow Sludge Blanket Filtration (USBF) biological treatment process, or equivalent. This facility will additionally require filtration, disinfection, and ferric sulfate addition for phosphorus removal.	
Treated effluent will be discharged to shallow disposal wells.	
Sludge handling will consist of aerobic digestion/holding/decanting tanks with a truck loading station for hauling to Miami Water and Sewer District (WASD).	
Unit processes will be in compliance with FDEP Class 1 Reliability standards.	
Corrosion resistant materials of construction will be required.	
Portability of tank(s) and equipment will be required to the extent practical (i.e., could be partially or totally relocated to another site at some time in the future.)	

Proposal No.: BJB-0116-02-CK

Date: January 17, 2002

RANDAZZA ENTERPRISES, INC.

DATE: January 17, 2002

TO: Mr. Ray Shimokubo, P.E.
Boyle Engineering

RE: Sewage Treatment Equipment For:

FACSIMILE REQUEST AND TRANSMITTAL INFORMATION

RANDAZZA ENTERPRISES INC.

Manufacturers Representative

PURESTREAM WASTEWATER TREATMENT SYSTEMS

NORWECO CHEMICALS

8824 VanFleet Road Riverview Florida 33569 / E-mail: Booczar@aol.com

Phones: 813 677 3359 / 813 677 0041 / Fax: 813 677 0413 / Cell: 813 310 7030

Date: January 17, 2001

To: Mr. Ray M. Shimokubo, P.E

No. Pages: 3 incl. cover

Tel. No:

From: Nocif "Nos" Espat

Fax No: 941 278 0913

Dear Ray:

Attached please find our proposal for the Conch Key Wastewater Treatment Plant System.

The originals with my business cards and Brochures will be sent to you today via FEDEX next day delivery.

Once again, thank you for the opportunity to be service to you and your fine staff of Engineers.

Best Regards

Nos
Nos Espat

ATT:

Commissioner

MURRAY E. Nelson

E.C.T.

Subj: **FW: Conch Key USBF Follow-Up**
 Date: 4/16/2003 10:30:30 AM Eastern Standard Time
 From: DReffling@BoyleEngineering.com
 To: BOOCZAR@aol.com
 Sent from the Internet (Details)

Please review the following items so we can discuss ASAP.

- X > **ADDITIONAL INFORMATION NEEDED FROM PURESTREAM TO FINALIZE THE PDR**
- >
- > * Process design calculations for 50,000 gpd plant to address gravity sewer option with higher I&I flows. The current 42,000 gpd design would be linked to the vacuum option. At 50,000 gpd we would reduce BOD and TSS to 200. *Calculations to be done.*
- >
- X > * We all agree (except maybe Ray) that equalization in the onsite lift station wet well would be preferable to adding EQ tankage to the USBF unit. However, you may want to inquire about EQ tankage just in case Ray pushes for this. We will try to talk Ray out of it if he persists. How much extra cost would there be for an EQ tank?
- >
- > * You can let Nos know that we will be bidding the filters as an alternate, with USBF required to meet discharge limits on its own. This is for 10-10-10-1. I know this isn't a problem for you.
- >
- > * It would be beneficial to begin getting input on feasibility, design issues, costs, etc. for going to an all 316 SS USBF unit or concrete walls with 316 SS internals. This effort will continue into 50% design phase. This has been requested by Ray and we have discussed with Jim Reynolds. They are looking for "FKAA" type permanent construction. Hopefully cost estimates will show how expensive it will be.
- >
- >
- >
- > Fred Mittl
- > Boyle Engineering Corporation
- > 4415 Metro Parkway, Suite 404
- > Fort Myers, FL 33916
- > 239-278-7996 voice
- > 239-278-0913 fax
- > 239-464-4418 cell
- > fmittl@boyleengineering.com
- >

Monday, April 21, 2003 America/Indiana/Indianapolis BOOCZAR

*Cost Comparison Between
Complete Steel Package/Skid Mounted Plants
And Concrete Systems for
USBF and SBR*

PROJECT NAME	USBF STEEL	USBF CONCRETE	SBR STEEL	SBR CONCRETE
Rockland Key 62,400 GPD	\$ 295,458.00	\$ 628,036.00	\$ 445,878.00	\$ 977,478.00
Geiger Key 62,400 GPD	\$ 295,458.00	\$ 628,036.00	\$ 445,878.00	\$ 977,478.00
Big Koppitt 186,000 GPD	\$ 845,796.00	\$1,268,595.00	\$ 992,625.00	\$ 1,480,274.00

Opinion of Probable Construction Cost for Construction of a New FCAA Sub-Regional Wastewater Treatment Plant for Geiger Key Using USBF Treatment

Item	Units	Qty	Unit Cost	Cost
Collection System				
Vacuum Station	EA	1	\$630,518	\$630,518
Vacuum Valves	EA	158	\$6,200	\$979,600
3" Service W/ crossover connection	EA	158	\$500	\$79,000
Spare Parts & Startup	LS	1	\$87,000	\$87,000
Buffer Tanks				
Single	EA	1	\$3,000	\$3,000
Dual	EA	0	\$4,000	\$0
Quad	EA	0	\$8,000	\$0
Vacuum Main				
4" Line	LF	14150	\$45	\$636,750
6" Line	LF	670	\$50	\$33,500
8" Line	LF	0	\$60	\$0
10" Line	LF	0	\$60	\$0
Force Main				
6" Line	LF	100	\$45	\$4,500
8" Line	LF	0	\$50	\$0
10" Line	LF	0	\$60	\$0
Valves				
4"	EA	14	\$1,000	\$14,000
6"	EA	5	\$1,500	\$7,500
8"	EA	0	\$2,000	\$0
Restoration Items				
Driveway Restoration	LF	6500	\$30	\$195,000
Sodding	LF	1200	\$6	\$7,200
Asphalt Restoration	LF	12000	\$30	\$360,000
SUB-SUB-TOTAL				\$3,037,568
Bar Screen				
Automatic mechanical bar screen	EA	1	\$79,858	\$79,858
Mechical Screen Structure	LS	1	\$25,000	\$25,000
Equipment Package Includes	LS	1	\$295,458	\$295,458
1-Submerged bar screen				
2-Airlift Sludge Pumps				
2-Submersible Mixers				
Fine bubble diffuser system for Aeration Chamber				
2-10 hp Blowers				
1-Prewired control Panels				

Item	Units	Qty	Unit Cost	Cost
2-Clarifier tank with effluent trough				
Coarse Bubble Diffuser System for Sludge Chamber				
Aluminum walkway, grating, handrails, and steps				
2-Set of belts/sheaves for blowers				
1-Manual hoist for mixers				
2-Ferric sulfate feed system				
1-Portable dissolved oxygen meter				
Concrete Tanks	CY	182	\$566	\$103,012
Filtration				
2-Microscreen filters	EA	2	\$37,775	\$75,550
Filter Pad	CY	10	\$500	\$5,000
Effluent Disinfection				
Sodium Hypochlorite Feed System	LS	1	\$6,400	\$6,400
Chemical storage area, includes Concrete, piping, and roofing	LS	1	\$7,016	\$7,016
Chlorine contact tank	CY	56	\$564	\$31,584
Generator/blower/control building	SF	625	\$125	\$78,125
Generator	EA	1	\$40,222	\$40,222
Effluent Disposal				
Shallow Injection Wells	EA	3	\$6,000	\$18,000
SUB-SUB-TOTAL				\$765,225
Site work	%	10		\$76,523
* Electrical	%	15		\$114,784
* Yard Piping	%	15		\$114,784
Contingency	%	20		\$153,045
SUB-TOTAL				\$1,224,360
TOTAL				\$4,261,928

**Opinion of Probable Construction Cost for Construction of a New FKAA Sub-Regional
Wastewater Treatment Plant for Geiger Key Using SBR Treatment**

Item	Units	Qty	Unit Cost	Cost
Collection System				
Vacuum Station	EA	1	\$630,518	\$630,518
Vacuum Valves	EA	158	\$6,200	\$979,600
3" Service W/ crossover connection	EA	158	\$500	\$79,000
Spare Parts & Startup	LS	1	\$87,000	\$87,000
Buffer Tanks				
Single	EA	1	\$3,000	\$3,000
Dual	EA	0	\$4,000	\$0
Quad	EA	0	\$8,000	\$0
Vacuum Main				
4" Line	LF	14150	\$45	\$636,750
6" Line	LF	670	\$50	\$33,500
8" Line	LF	0	\$60	\$0
10" Line	LF	0	\$60	\$0
Force Main				
6" Line	LF	100	\$45	\$4,500
8" Line	LF	0	\$50	\$0
10" Line	LF	0	\$60	\$0
Valves				
4"	EA	14	\$1,000	\$14,000
6"	EA	5	\$1,500	\$7,500
8"	EA	0	\$2,000	\$0
Restoration Items				
Driveway Restoration	LF	6500	\$30	\$195,000
Sodding	LF	1200	\$6	\$7,200
Asphalt Restoration	LF	12000	\$30	\$360,000
SUB-SUB-TOTAL				\$3,037,568
Bar Screen				
Automatic mechanical bar screen	EA	1	\$79,858	\$79,858
Mechical Screen Structure	LS	1	\$25,000	\$25,000
Equipment Package Includes	LS	1	\$445,878	\$445,878
1-Submerged bar screen				
4-15 hp Blowers				
Bubble diffuser system for Reactors				
1-Prewired control Panel for Reactors				
Bubble diffuser system for Digester				
4-5 hp Blowers				

Item	Units	Qty	Unit Cost	Cost
2-Adjustable Airlift Decant				
1-Prewired control Panel for Main Plant				
4-0.75 hp Decant Pumps				
4-0.5 hp Sludge Waste Pumps				
Course Bubble diffuser system for Inlet Surge Tank				
2- 5 hp Blowers				
4-0.5 hp Surge/feed Pumps				
1-Prewired Control Panel for Surge Control Equipment				
2-0.75 hp Pumps				
4-2.95 hp Submersible Mixers				
Aluminum walkway, grating, handrails, and steps				
Set of belts for blowers				
Manual hoist for mixers				
2-Ferric sulfate feed system				
Concrete Tanks	CY	337	\$558	\$188,046
Alum Feed System	LS	1	\$35,000	\$35,000
1-Portable dissolved oxygen meter				
Filtration				
2-Microscreen filters	EA	2	\$37,775	\$75,550
Filter Pad	CY	10	\$500	\$5,000
Effluent Disinfection				
Sodium Hypochlorite Feed System	LS	1	\$6,400	\$6,400
Chemical storage area, includes Concrete, piping, and roofing	LS	1	\$7,016	\$7,016
Chlorine contact tank	CY	56	\$564	\$31,584
Generator/blower/control building	SF	1040	\$125	\$130,000
Generator	EA	1	\$55,998	\$55,998
Effluent Disposal				
Shallow Injection Wells	EA	3	\$6,000	\$18,000
Sludge Drying Beds	LF	1800	\$23.25	\$41,850
SUB-TOTAL				\$1,145,180
Site work	%	10		\$114,518
Electrical	%	15		\$171,777
Yard Piping	%	15		\$171,777
Contingency	%	20		\$229,036
SUB-TOTAL				\$1,832,288
TOTAL				\$4,869,856

**Opinion of Probable Construction Cost for Construction of a New FKAA Regional
Wastewater Treatment Plant Using USBF Treatment**

Item	Units	Qty	Unit Cost	Cost
Collection System				
Vacuum Station	EA	3	\$630,518	\$1,891,554
Vacuum Valves	EA	604	\$6,200	\$3,744,800
3" Service W/ crossover connection	EA	604	\$500	\$302,000
Spare Parts & Startup	LS	1	\$161,000	\$161,000
Buffer Tanks				
Single	EA	4	\$3,000	\$12,000
Dual	EA	1	\$4,000	\$4,000
Quad	EA	1	\$8,000	\$8,000
Vacuum Main				
4" Line	LF	54920	\$45	\$2,471,400
6" Line	LF	11880	\$50	\$594,000
8" Line	LF	3900	\$60	\$234,000
10" Line	LF	0	\$60	\$0
Force Main				
6" Line	LF	14,925	\$45	\$671,625
8" Line	LF	0	\$50	\$0
10" Line	LF	0	\$60	\$0
Valves				
4"	EA	43	\$1,000	\$43,000
6"	EA	17	\$1,500	\$25,500
8"	EA	3	\$2,000	\$6,000
Restoration Items				
Driveway Restoration	LF	4000	\$30	\$120,000
Sodding	LF	10000	\$6	\$60,000
Asphalt Restoration	LF	1500	\$30	\$45,000
SUB-SUB-TOTAL				\$10,393,879
Bar Screen				
Mechical Screen Structure	LS	1	\$25,000	\$25,000
Equipment Package Includes	LS	1	\$676,034	\$676,034
1-Submerged bar screen				
1-Automatic mechanical bar screen				
8-Airlift sludge return pumps				
4-Submersible Mixers				
Fine bubble diffuser system				
2-50 hp Blowers				
2-5 hp Blowers				

Item	Units	Qty	Unit Cost	Cost
1-Prewired control Panels				
4-Clarifier tank with effluent trough				
Aluminum walkway, grating, handrails, and steps				
2-Set of belts/sheaves for blowers				
1-Manual hoist for mixers				
2-Ferric sulfate feed system				
1-Portable dissolved oxygen meter				
2-Microscreen filters				
Concrete Tanks	CY	451	\$550	\$248,050
Filtration				
Filter Pad	CY	10	\$500	\$5,000
Effluent Disinfection				
Sodium Hypochlorite Feed System	LS	1	\$6,400	\$6,400
Chemical storage area, includes Concrete, piping, and roofing	LS	1		\$10,016
Chlorine contact tank	CY	56	\$564	\$31,584
Generator/blower building	SF	820	\$125	\$102,500
Generator	EA	1	\$55,998	\$55,998
Effluent Disposal				
Shallow Injection Wells	EA	6	\$6,000	\$36,000
SUB-SUB-TOTAL				\$1,196,582
Site work	%	10		\$119,658
Electrical	%	15		\$179,487
Yard Piping	%	15		\$179,487
Contingency	%	20		\$239,316
SUB-TOTAL				\$1,914,531
TOTAL				\$12,308,410

**Opinion of Probable Construction Cost for Construction of a New FKAA Regional
Wastewater Treatment Plant Using SBR Treatment**

Item	Units	Qty	Unit Cost	Cost
Collection System				
Vacuum Station	EA	3	\$630,518	\$1,891,554
Vacuum Valves	EA	604	\$6,200	\$3,744,800
3" Service W/ crossover connection	EA	604	\$500	\$302,000
Spare Parts & Startup	LS	1	\$161,000	\$161,000
Buffer Tanks				
Single	EA	4	\$3,000	\$12,000
Dual	EA	1	\$4,000	\$4,000
Quad	EA	1	\$8,000	\$8,000
Vacuum Main				
4" Line	LF	54920	\$45	\$2,471,400
6" Line	LF	11880	\$50	\$594,000
8" Line	LF	3900	\$60	\$234,000
10" Line	LF	0	\$60	\$0
Force Main				
6" Line	LF	14,925	\$45	\$671,625
8" Line	LF	0	\$50	\$0
10" Line	LF	0	\$60	\$0
Valves				
4"	EA	43	\$1,000	\$43,000
6"	EA	17	\$1,500	\$25,500
8"	EA	3	\$2,000	\$6,000
Restoration Items				
Driveway Restoration	LF	4000	\$30	\$120,000
Sodding	LF	10000	\$6	\$60,000
Asphalt Restoration	LF	1500	\$30	\$45,000
SUB-SUB-TOTAL				\$10,393,879
Bar Screen				
Mechical Screen Structure	LS	1	\$25,000	\$25,000
Equipment Package Includes	LS	1	\$875,688	\$875,688
1-Submerged bar screen				
1-Automatic mechanical bar screen				
4-75 hp Blowers				
Bubble diffuser system for Reactors				
1-Prewired control Panel for Reactors				
Bubble diffuser system for Digester				
2-25 hp Blowers				

Item	Units	Qty	Unit Cost	Cost
2-Adjustable Airlift Decant				
1-Prewired control Panel for Main Plant				
4-5 hp Decant Pumps				
4-0.75 hp Sludge Waste Pumps				
Bubble diffuser system for Inlet Tank				
2- 20 hp Blowers				
4-5 hp Surge/feed Pumps				
1-Prewired Control Panel for Surge Control Equipment				
2-2hp Pumps				
1-Prewired Control Panel for Decant Control Equipment				
12-16 hp Submersible Mixers				
Aluminum walkway, grating, handrails, and steps				
Set of belts for blowers				
2-Ferric sulfate feed system				
1-Portable dissolved oxygen meter				
2-Microscreen filters				
Concrete Tanks	CY	626	\$540	\$338,040
Alum Feed System	LS	1	\$48,000	\$48,000
Filtration				
Filter Pad	CY	10	\$500	\$5,000
Effluent Disinfection				
Sodium Hypochlorite Feed System	LS	1	\$6,400	\$6,400
Chemical storage area, includes Concrete, piping, and roofing	LS	1		\$10,016
Chlorine contact tank	CY	56	\$564	\$31,584
Generator/blower building	SF	1240	\$125	\$155,000
Generator	EA	1	\$160,298	\$160,298
Effluent Disposal				
Shallow Injection Wells	EA	6	\$6,000	\$36,000
Sludge Drying Beds	LF	8340	\$23.25	\$193,905
SUB-SUB-TOTAL				\$1,884,931
Site work	%	10		\$188,493.10
Electrical	%	15		\$282,739.65
Yard Piping	%	15		\$282,739.65
Contingency	%	20		\$376,986.20
SUB-TOTAL				\$3,015,890
TOTAL				\$13,409,769

**Opinion of Probable Construction Cost for Construction of a New FKAA Sub-Regional
Wastewater Treatment Plant for Rockland Key Using USBF Treatment**

Item	Units	Qty	Unit Cost	Cost
Collection System				
Vacuum Station	EA	1	\$630,518	\$630,518
Vacuum Valves	EA	63	\$6,200	\$390,600
3" Service W/ crossover connection	EA	63	\$500	\$31,500
Spare Parts & Startup	LS	1	\$87,000	\$87,000
Buffer Tanks				
Single	EA	1	\$3,000	\$3,000
Dual	EA	0	\$4,000	\$0
Quad	EA	0	\$8,000	\$0
Vacuum Main				
4" Line	LF	9720	\$45	\$437,400
6" Line	LF	5460	\$50	\$273,000
8" Line	LF	0	\$60	\$0
10" Line	LF	0	\$60	\$0
Force Main				
6" Line	LF	150	\$45	\$6,750
8" Line	LF	0	\$50	\$0
10" Line	LF	0	\$60	\$0
Valves				
4"	EA	8	\$1,000	\$8,000
6"	EA	1	\$1,500	\$1,500
8"	EA	0	\$2,000	\$0
Restoration Items				
Driveway Restoration	LF	2500	\$30	\$75,000
Sodding	LF	4800	\$6	\$28,800
Asphalt Restoration	LF	2000	\$30	\$60,000
SUB-SUB-TOTAL				\$2,033,068
Bar Screen				
Automatic mechanical bar screen	EA	1	\$79,858	\$79,858
Mechical Screen Structure	LS	1	\$25,000	\$25,000
Equipment Package Includes	LS	1	\$295,458	\$295,458
1-Submerged bar screen				
2-Airlift Sludge Pumps				
2-Submersible Mixers				
Fine bubble diffuser system for				
Aeration Chamber				
2-10 hp Blowers				